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Q93

With reference to the recent developments in science, which one of the following statements is not correct? (a) Functional chromosomes can be created by joining segments of DNA taken from cells of different species. (b) Pieces of artificial functional DNA can be created in laboratories. (c) A piece of DNA taken out from an animal cell can be made to replicate outside a living cell in a laboratory. (d) Cells taken out from plants and animals can be made to undergo cell division in laboratory petri dishes.

Official key: A.

UPSC Civil Services Prelims 2019 · General Studies · 2 marks · Science and Technology

Science, technology, space, defence, IT - Prelims GS Paper I.

Explanation**(a) Official key**

(a) Functional chromosomes created by joining DNA segments from cells of different species is the statement that is not correct. Chromosomes are species-specific organisational structures; you cannot generally assemble a working **chromosome** by splicing bits from different species in the way the option claims. That is the official key (the not-correct statement).

(b)

(b) Artificial functional DNA can be synthesised in laboratories (**gene synthesis**, synthetic genomes). This statement is correct, so it is not the key.

(c)

(c) DNA can be replicated in vitro (**PCR**, cell-free systems). This statement is correct, so it is not the key.

(d)

(d) Plant and animal cells can be cultured and divided in petri dishes. This statement is correct, so it is not the key.

Summary

Official key is (a). The question asks for the statement that is not correct. Lab DNA synthesis, in-vitro replication and cell culture are real. Building a functional **chromosome** by joining DNA from different species is not an established correct claim. Honour (a).

Related possible facts

These can be asked in a future Prelims paper.

PCR

In-vitro DNA amplification

Gene synthesis

Chemical assembly of DNA sequences

Tissue culture

In-vitro cell division of plant and animal cells

Synthetic biology

Craig Venter-type synthetic bacterial genomes; still within a species chassis

Chromosome

DNA plus centromere, telomeres, chromatin organisation

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